

Serial No. 10/671,131

Page 2 of 7

OCT 31 2007

**LISTING OF THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (previously presented) A heterodyne receiver for use in optical switch fabrics  
2 comprising:  
3       a tunable oscillator circuit for outputting a predetermined local oscillation  
4 frequency signal to a frequency mixer;  
5       said frequency mixer for mixing an input data signal and said predetermined local  
6 oscillation frequency signal and outputting substantially similar mixed signals on at least  
7 two separate paths;  
8       a current comparing means for comparing said mixed signals and generating a  
9 voltage value indicative of a difference in current within said at least two separate paths;  
10      a gain clipped amplifier for amplifying said voltage value such that a first signal is  
11 generated; and  
12      a decision circuit for receiving said first signal and producing a resultant logic  
13 signal.

1 2. (previously presented) The heterodyne receiver of claim 1, further comprising a  
2 low-pass filter for filtering said first signal.

1 3. (currently amended) The heterodyne receiver of claim [[1]]2, wherein said low-  
2 pass filter comprises an SMA connector.

1 4. (original) The heterodyne receiver of claim 1, wherein said tunable oscillator  
2 circuit comprises a fast switchable laser.

1 5. (original) The heterodyne receiver of claim 1, wherein said frequency mixer  
2 comprises a 3dB coupler.

620111-1

Serial No. 10/671,131

Page 3 of 7

1 6. (original) The heterodyne receiver of claim 1, wherein said current comparing  
2 means comprises two photodiodes and a differential amplifier.

1 7. (previously presented) The heterodyne receiver of claim 1, wherein said gain  
2 clipped amplifier is operated in saturation.

1 8. (previously presented) The heterodyne receiver of claim 1, wherein said decision  
2 circuit produces a logic high output if said first signal is higher than a predetermined  
3 threshold and produces a logic low output if said first signal is lower than a  
4 predetermined threshold.

1 9. (original) The heterodyne receiver of claim 1, further comprising at least one  
2 respective delay line and at least one respective attenuator in each of said at least two  
3 separate paths for making the signal propagation time and loss in said at least two  
4 separate paths substantially equal.

1 10. (original) The heterodyne receiver of claim 1, wherein said decision circuit  
2 comprises a limiting amplifier.

1 11. (previously presented) An optical switch fabric, comprising:  
2 a plurality of optical transmitters;  
3 a multiplexer for combining the optical channels of said optical transmitters;  
4 a power splitter for splitting said combined optical channels; and  
5 at least one receiver for receiving at least one of said split, combined optical  
6 channels, each of said at least one receivers comprising:  
7 a tunable oscillator circuit for outputting a predetermined local oscillation  
8 frequency signal to a frequency mixer;  
9 said frequency mixer for mixing said received split, combined optical  
10 channels and said predetermined local oscillation frequency signal and outputting  
11 substantially similar mixed signals on at least two separate paths;

Serial No. 10/671,131

Page 4 of 7

12           a current comparing means for receiving said mixed signals via said at  
13        least two separate paths and for generating a voltage value indicative of a  
14        difference in current within said at least two separate paths;

15           a gain clipped amplifier for amplifying said voltage value such that a first  
16        signal is generated; and

17           a decision circuit for receiving said first signal and producing a resultant  
18        logic signal.

1 12. (original) The optical switch fabric of claim 11, wherein the signals of said  
2 plurality of transmitters are delayed replicas of each other, except that two of them are in  
3 phase.

1 13. (original) The optical switch fabric of claim 11, further comprising an amplifier  
2 for amplifying said combined optical channels

1 14. (original) The optical switch fabric of claim 11, further comprising a polarizer for  
2 polarizing said combined optical channels such that all of the optical channels propagate  
3 with substantially the same polarizations.

1 15. (original) The optical switch fabric of claim 11, further comprising a central  
2 clock distribution unit and delay lines.

1 16. (previously presented) A method of channel selection for use in optical switch  
2 fabrics, comprising:

3           mixing an input data signal and a local oscillation frequency signal from a tunable  
4 oscillator circuit to generate substantially similar mixed signals on at least two separate  
5 paths;

6           comparing said mixed signals using a current comparing means and generating a  
7 voltage value indicative of a difference in current within said at least two separate paths;

8           amplifying said voltage value using a gain clipped amplifier such that a first  
9 signal is generated; and

620111-1

Serial No. 10/671,131

Page 5 of 7

10 determining from said first signal a resultant logic signal.

1 17. (canceled)

1 18. (previously presented) A heterodyne receiver for use in optical switch fabrics  
2 comprising:

3 means for mixing an input data signal and a local oscillation frequency signal  
4 from a tunable oscillator circuit to generate substantially similar mixed signals on at least  
5 two separate paths;

6 means for comparing said mixed signals and generating a voltage value indicative  
7 of a difference in current within said at least two separate paths;

8 means for amplifying said voltage value with gain clipping such that a first signal  
9 is generated; and

10 means for determining from said first signal a resultant logic signal.

1 19. (currently amended) The heterodyne receiver of claim 1, wherein the  
2 substantially similar mixed signals each has a frequency of at least [[a]]one GHz.

1 20. (currently amended) The method of claim 16, wherein the substantially similar  
2 mixed signals each has a frequency of at least [[a]]one GHz.

1 21. (currently amended) The heterodyne receiver of claim 18, wherein the  
2 substantially similar mixed signals each has a frequency of at least [[a]]one GHz.